REPLY TO COMMENT ON "MICROWAVE OVEN BURNS" BY JOHN M. OPSEPCHUK, Ph.D.

Editor:

I wrote a *medical* paper, based upon a history, symptoms, physical examination, a methodology to detect damage, and conclusions which are justified by pertinent research papers listed under the references.

Our divergent approaches stem from the fact that an engineer intends to defend an industrial product at *all* costs and a physican committed to help those in need, unattached and uncommitted to any organization and encouraged to report to his *peers* experiences which might be of help to them and further to establish methods of documenting damage where documentation was missing before the trial.

What bearing a trial by an undereducated jury should have on scientific facts escapes me. The acceptance of the point of view of the defense speaks for the skill of the Tappan lawyers. The truth, however, is not served in this way. Since the patient had no money to appeal, the court had no other option but to affirm the jury's verdict. That, too, has no relevance to the scientific facts. I did not presume to write a paper about microwaves, I wrote a paper about the consequences of exposure to escessive amounts of microwave energy. Safety regulations are written by industry experts and sanctioned by government agencies. Ovens are practically *not* foolproof, no more than cars, airplanes, trains, bridges. Ovens are mechanical devices and as such will fail eventually, and in this case we just may deal with the one in 300 million.

When the patient stuck her hands into the oven there was no manufacturer, distributor, local or federal health authority present, hence no measurements. However, the oven was tested later by a reliable firm (see trial record) and failed once again. The oven was produced in court as evidence. While in the active oven for 5 seconds, energy absorption was, I am sure, not in the 5mW/cm^2 range. The oven did operate when the door was opened, the resulting micro-oven burn was attested to as such by all physicians who saw her early after the accident. Microwave burns do not produce skin destruction as ordinary fire or electric low voltage currents do. The damage is to

the peripheral nervous system. To produce damage a rise in temperature from 48.5° to 50° is all that is required to induce hypersensitivity of the nervous system and eventual destruction.

My text on pulsating sensation reads as follows, my italics (PP. 314-15):

> The initial pulsating sensation is due *either* to the action or stirrer mechanism at the end of the wave guide, the function of which is to distribute the energy from the back to the front of the cavity. The distribution is in successive sweeps of energy and may give a sensation of pulses, *or the pulsating sensation is due to arterial pulsation strongly perceived because of sensory nerve* sensitivity.

The microtherm by Raytheon and presumably its analog by Siemens are clinical instruments used in medical practice at 30 to 40% of their maximal output of 100 to 150 W. At full output they will cause a nasty burn and, in one reported case, a severe burn due to a piece of metal in skin contact under the director. In this burn after six years a basal cell carcinoma developed.

Cataracts and testicular damage are well known microwave by-products. Microtherm energy is radiated into space by multishaped directors (antennas). I have used the machine since its inception and have escaped damage by its judicious use. Potentially, it is a dangerous instrument in the hands of the unskilled and unexperienced. We are told by the manufacturer of the oven[2] that on one hand the oven door is leakproof, and on the other that small amounts of energy can leak through the door. You confirm that in your comment: "Typical leakage at 5 cm for today's ovens may be 0.1mW/cm^2." My question then is: What happens to the eye of a housewife who observes the food through the door, leaning against it with the forehead, year after year?

Does the rule that harmonics have to be 10,000 times lower to meet FCC specifications apply to ovens or the communications equipment?

HENRY FLECK, M.D.

REFERENCES

1. Ippen, H.: Basiliom in Verbrennungs Narbe durch Micro wellen. *Dermatosen 30:* 1982.

2. Hallmark, C. L.: *Microwave Oven Service and Repair.* TAB Books, 1980, No. 962, pp. 35-38, 2nd printing.

Editor's note: This discussion is closed.

Erratum

In the 16th line on page 539 of the July-August 1984 issue of the *Bulletin,* 1982 should be 1962.